

REMARKS

Claims 2-4, 6-10, 12-19 and 21-40 are pending in the application. With this Amendment, claims 2-3, 8-10, 21-25, 32-36 and 39 were amended to further define the invention. No new matter has been added.

Claim 3 has been objected to for containing an informality on line 3, last word. In order to have the objection removed, claim 3 has been amended to remove the word "either" from line 3.

Regarding claims 35 and 36, the same have been objected to as the Examiner states the language "said securing element connects said blade to said body, whereby..." has also been listed in claim 34. Therefore, the Examiner believes the underlined portion should be deleted.

In complying with the Examiner's request, the language "said securing element connects said blade to said body, whereby" has been removed from both claims 35 and 36 to prevent redundancy in view of claim 34. Removal of the objection is respectfully requested.

The drawings have been objected to under 37 C.F.R. §1.83(a). Claims 9 and 22 have also been rejected under 35 U.S.C §112, first paragraph. With regard to the rejection, it is believed that the Examiner's objection relates to the fact that claims 8 and 21 referred to the securing element having a head portion with an end that extends from the blade face a first distance or less than as previously defined, wherein one embodiment is shown in FIG. 10A and the embodiments set forth in claims 9 and 22 have been shown as requested in FIGS. 11 and 12. The Examiner states that it is impossible for the head portion end to both extend from the blade face as well as be flush mounted or recess mounted.

Independent claims 8 and 21 have been amended to further define that the securing element head portion has an end that either (a) extends out from said blade face surface a first distance which is less than or equal to a second distance measured from a lower edge of the securing element head to a lower cutting edge of the blade, (b) is flush mounted in relation to said blade face, or (c) is recess mounted in relation to said blade face. Support for the amendment is set forth on page 17, third full paragraph, continuing on to page 18. Accordingly, it is believed that the objection to the drawings under 37 C.F.R. §1.83(a) and 35 U.S.C. §112, first paragraph, rejection have been overcome. As stated hereinabove, one embodiment of configuration (a) set forth in claims 8 and 21 is shown in FIG. 8 and 10A and embodiments of configurations (b) and (c) are shown in FIGS. 11 and 12. It is respectfully submitted that no additional drawing sheets are

necessary. However, should the Examiner have concerns, a telephone call to the undersigned is greatly appreciated.

Claims 32-33 and 35-36 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention.

Claims 32 and 33 have been amended to further define that the method further includes the step of removing weld overlay and/or membrane present on the tube within the annular cutting sweep of the milling head such as set forth in page 19, first full paragraph. As the redundant portions of claims 32 and 33 have been removed, it is respectfully submitted that the 35 U.S.C. §112, second paragraph, rejection with respect to claims 32 and 33 has been overcome. Moreover, as suggested by the Examiner, in claims 35 and 36 the language "said securing element connects said blade to said body, whereby..." has been removed in order to prevent redundancy with independent claim 34.

In order to have the objection regarding claim 39 removed, the dependency thereof has been amended to refer to claim 38 which refers to claim 36 and includes the claimed first and second distances.

Claims 3-4, 6-7 and 23-24 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Carlson et al. (U.S. Patent No. 4,691,600), in view of Bourguignon (U.S. Patent 2,970,843) and further in view of AAPA. The Examiner states that Carlson fails to teach a securing device for securing the arbor device to the tube, but that the Bourguignon reference and Applicant's admitted prior art teaches that rotary milling tools are known to be temporarily connected or secured to a tube during operation using a collet or other securing device as known in the art. The Examiner states therefore it would have been obvious to one of ordinary skill in the art to modify the Carlson reference such that the arbor incorporates a collet type construction.

It is respectfully submitted that the cited references in combination with Applicant's admitted prior art cannot teach or suggest the present invention as claimed in independent claim 23 absent impermissible hindsight. Independent claim 23 has been amended to further define that the method relates to preparing metal tube ends further distinguishing the claimed method from the method taught in the Carlson reference. Applicant's method relates to removing tube material from an outer diameter surface of a metal tube, especially in a tube bank, wherein tubes are connected by a web or membrane. Due to the relatively harsh environment, the tubes occasionally will require

replacement due to facts such as corrosion, wear, or the like. Carlson, on the other hand, addresses a different problem in a different field. As stated in the Carlson "Background of the Invention", Carlson teaches a pipe shaver that is directed to use on pipes made of reinforced plastic used to carry fluid, such as liquids and gases. The integrity of joints of the pipes is reportedly enhanced when the mating surfaces of the plastic pipe and coupling have close tolerances which are achieved by shaving the outer end of the plastic pipe to provide a smooth uniform diameter cylindrical surface.

It is respectfully submitted that the Examiner has not presented a *prima facie* case of obviousness and that the cited references do not place the needed subject matter supporting the obviousness rejection in the public domain before the date of invention. As stated *In re Wood*, 599 F.2d 1032, 202 USPQ 171, 174 (C.C.P.A. 1979), "the test for obviousness is not whether the features of one reference may be bodily incorporated into another reference . . . Rather, we look to see whether combined teachings render the claimed subject matter obvious." The Federal Circuit has also that "obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination." (See *In re Geiger*, 815 F.2d 686, 2 USPQ 2d 1276, 1278 (Fed. Cir. 1987). Further, the Federal Circuit has stated:

"It is impermissible to use the claimed invention as an instruction manual or 'template' to piece together the teachings of the prior art so that the claimed invention is rendered obvious. This court has previously stated that 'one cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention. See *In re Fritch*, 972 F.2d 1260, 23 USPQ 2d 1780, 1784 (Fed. Cir. 1992).

A factor cutting against a finding of motivation to combine or modify the prior art is when the prior art teaches away from the claimed combination. One of ordinary skill in the art, upon reading the Carlson reference, would be led in a direction divergent from the path that the Applicant took. The Carlson reference, as detailed in the prior amendment, includes mandrel 33 that co-rotates with pipe shaver 10, with mandrel 33 moving in the pipe passage 14 as the shaver operates.

The Federal Circuit has noted that the fact that an invention is a combination of old or known elements does not negate patentability, see *Lindermann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 730 F.2d 1452, 221 USPQ 481 (Fed. Cir. 1984). It is respectfully

submitted that the claimed invention must be considered as a whole, and the question is whether there is something in the prior art as a whole to suggest the desirability, and thus the obviousness, of making the combination.

Nothing in the cited references alone or together suggests the method set forth in independent claim 23 and dependent claims thereof as a solution to the problem of joined tubes having relatively poor weld strength or weaknesses at the weld area, wherein one or more of the joined tubes was prepared using a prior art method such as described in Applicant's "Background". There is no teaching or suggestion within the cited references to modify or combine the prior art references to arrive at the claimed method.

The Carlson reference also does not teach or suggest the claimed method which utilizes the claimed milling head having the specifically recited features, such as in dependent claim 24, and claims dependent therefrom. Nothing in the Carlson reference suggests modification to the Applicant's claimed milling head, such as respectfully argued hereinbelow with respect to the apparatus claims.

Regarding the Bourguignon reference, it is understood that the reference teaches an expanding arbor, however, there is no teaching or suggestion as to how the Bourguignon reference could be modified to be utilized on the Carlson pipe shaver, much less replace the mandrel 33 thereof, absent impermissible hindsight.

Claims 2, 10, 12, 14, 16, 21-22, 25-35, 37 and 39 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Carlson et al. (U.S. Patent No. 4,691,600), in view of Bourguignon (U.S. Patent No. 2,970,843) and further in view of AAPA and Ricci (U.S. Patent 5,189,933). The Examiner states that the modified device (emphasis added) of Carlson as set forth in the above rejection teaches a milling head for removing an outer radial thickness of a tube to a predetermined depth from the tube end in the securing device for securing the arbor of the milling tool on the tube.

As respectfully submitted hereinabove, there is no teaching or suggestion within the cited references to modify the Carlson device as suggested by the Examiner, with the only suggestion or motivation coming from Applicant's specification.

Regarding claims 10, 21 and 34, the same have been amended in order to further distinguish the present invention from the Carlson reference. In addition to claiming that the cylindrical milling head is adapted to accept the end of a metal tube, the annular cutting sweep has been defined as

having an inner radius and an outer radius greater than an outer diameter of the tube consistent with the teachings on pages 17, second full paragraph, through page 19, first full paragraph, wherein it is described that the milling head has the ability to remove a percentage of an outer radial thickness of a tube, as well as any weld overlay and membrane present on a tube within the cutting sweep. As also claimed in independent claims 10, 21 and 34, the lower cutting edge of milling head extends below a lower end of the milling head body. At least these important aspects of the claimed present invention cannot be taught or suggested by Carlson.

First, Carlson's cutting sweep is no greater than the outer diameter of the tube. As illustrated in FIG. 5 and described in Col. 1, lines 40-42, the Carlson pipe shaver 10 is designed such that close tolerance is obtained between pipe 11, sidewall 21 and mandrel 33 as the inner edge of sidewall 21 is in a sliding fit relationship with pipe 11. Cutting discs 26, 31 and 32 do not extend below the lower end of pipe shaver 10, there is no teaching or suggestion for Applicant's claimed cutting sweep having an outer radius greater than the outer diameter of the tube.

With respect to Applicant's claimed limitation wherein the lower cutting edge extends below a lower end of the milling head body, the Examiner states on page 10 of the Office Action that in the event a larger size insert is used for machining, the lower cutting edge of the insert would extend below the lower end of the milling head body and that it is well known in the machining art to use whatever cutting blade was desired or expedient based upon the particular machining operation required.

As discussed herein, Carlson is related to a different problem. The preferred goal of Carlson is to provide a device adapted to shave the outer diameter of a plastic pipe. Carlson meets this goal by providing the pipe shaver device having cutting discs 26, 31 and 32 connected to a sidewall of a milling head and extending into a cylindrical recess in a predetermined distance in order to remove material from a pipe fitable within the recess. There is no teaching or suggestion within the Carlson reference with respect to the ability to remove outer diameter material from the surface of the tube, as well as to provide a cutting sweep having the ability to remove any weld overlay and membrane present on the tube by providing an annular cutting sweep as claimed having an outer radius greater than an outer diameter of the tube.

The Examiner states it would be obvious to use a larger size of insert in Carlson. One of ordinary skill in the art looking at the Carlson reference when reading the passage cited by the Examiner, namely column 3, lines 14-17, would only learn to adjust the depth of the cut laterally,

i.e. inwardly towards the central axis, in order to shave additional material from the outer diameter of the pipe 11.

It is respectfully submitted that the "obvious to try" standard is improper and the Examiner may not use as an element of the obviousness rejection that one of ordinary skill in the art would have arrived at the invention by trying different alternative structures or materials. There is no teaching or suggestion for extending the lower edge of the disc downwardly so much that the lower end extends past the lower end of sidewall 21 of pipe shaver 10! Moreover, as illustrated in FIG. 5 with respect to cutting disc 31, close tolerances are maintained between cutting disc 32 and curved lug 24 and Carlson does not have the ability to accept a much larger disc wherein a diameter thereof would not extend below the lower end of the pipe shaver. It is respectfully submitted that Carlson is not in possession of Applicant's claimed invention.

As set forth *In re Gurley*, 27 F.3d 551, 31 USPQ 2d 1130, 1131 (Fed. Cir. 1994), "A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that the applicant took." In this case, one only learns from Carlson to adjust the depth of the cut laterally and not downwardly below the lower end of the milling head according to the teachings of Carlson.

Regarding the Examiner's statement that Applicant has not provided any critical or unexpected results for the claimed ranges of outer radial thickness removal or the depth from the tube end, as described in the Background of the Invention, Applicant's field involves repair of metal tubes of tube banks generally utilized in boiler systems that circulate fluid such as water or steam that are often heated. In this environment, the metal tubes become corroded, deteriorated or the like and require replacement. As stated in the application, it is critical to form a strong weld between joined tubes, and the present invention provides such methods and apparatuses. Strong welds can unexpectedly be provided by removing a portion of the outer diameter of the original tube when using Applicant's device in the tube repairing process.

The remaining cited references cannot add any further teaching or suggestion that would be combined with the Carlson reference absent utilizing impermissible hindsight. The rejection has utilized the claimed invention as an instruction manual or template to piece together the teachings of the prior art so that the claimed invention is rendered obvious. As the Federal Circuit stated *In re Fritch*, 972 F.2d 1260, 23 USPQ 2d 1780, 1784 (Fed. Cir. 1992), "one cannot use hindsight

reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."

As described hereinabove, the Bourguignon reference merely relates to an expanding arbor as known in the prior art, but there is no suggestion to combine Bourguignon with Carlson or the other cited references, without utilizing Applicant's specification as a guide.

The Ueda reference merely relates to a cutting blade with no teaching or suggestion for Applicant's milling head configuration.

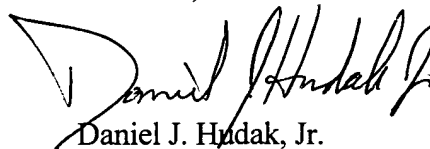
The Ricci reference relates to a portable lathe designed as a clamshell that is attached to the outside of a pipe to remove overlay welds on pipes used in nuclear boiling water reactor systems cannot add any further structure that would render the claims of the present invention obvious. As the Examiner states, Ricci is utilized to teach a lathe that is known to remove weld overlay. To that end, as state hereinabove, the Federal Circuit stated in *Lindermann* that the claimed invention may employ known principles does not itself establish that the invention would have been obvious. There is nothing in the prior art as a whole to suggest the desirability, and thus the obviousness, of making Applicant's claimed combination.

Regarding the remaining §103 rejections, it is respectfully submitted that only hindsight motivation can be utilized to arrive at the claimed invention as shown by the multiplicity of references cited by the Examiner.

Should the Examiner have any questions or concerns regarding this response, a telephone call to the undersigned is greatly appreciated in order to expedite allowance of the application.

Respectfully submitted,

HUDAK, SHUNK & FARINE CO. LPA



Daniel J. Hudak, Jr.

Registration No. 47,669

DJHjr/js
2020 Front Street, Suite 307
Cuyahoga Falls, OH 44221
330-535-2220

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